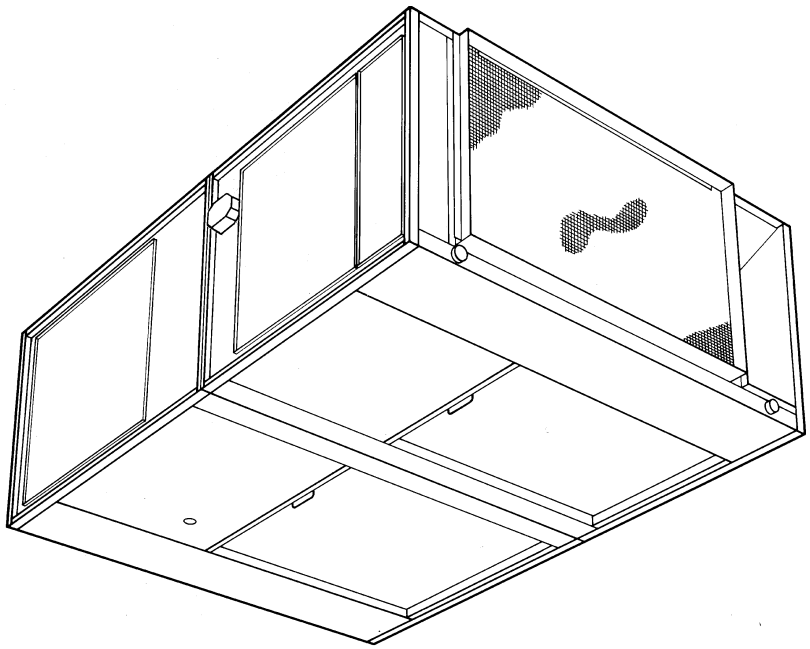
# HORIZONTAL INDOOR SINGLE PACKAGE COOLING UNITS

**Model 502A**
**Ceiling*PAC*™**
3 to 5 Tons



The 502A single package cooling units feature:

- compact design
- flexibility
- easy maintenance
- high quality and reliability
- quiet and efficient scroll compressor technology

## FEATURES/BENEFITS

All in one package — high cooling efficiency, installation convenience, ease of accessibility allow for time-saving maintenance.

**SPACE AND COST-SAVING DESIGN —** The Bryant Ceiling*PAC* unit is specifically designed to provide building owners with behind the scenes cooling. The compact design and low silhouette enable it to fit easily and securely within the ceiling above the conditioned space. Single package construction makes it easy to install with minimal time and cost.

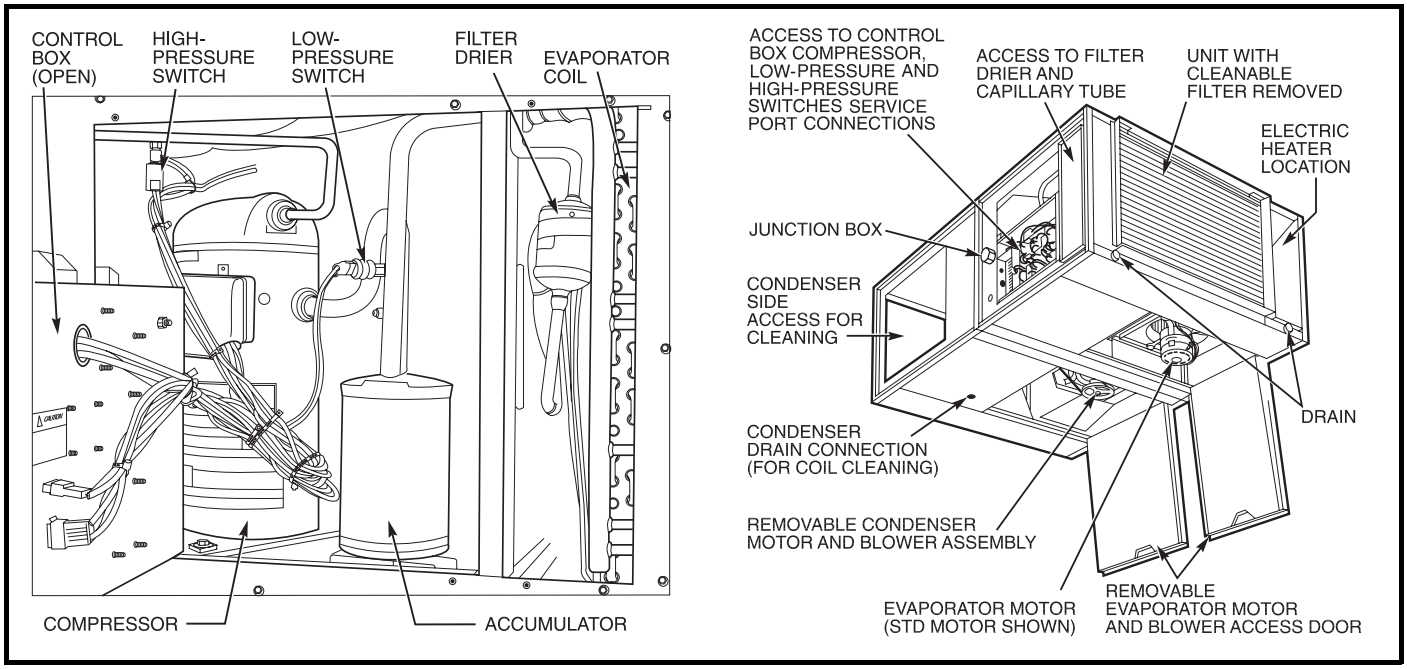
**APPLICATION FLEXIBILITY —** If desired for particular applications, the unit can also be installed as a split system with the condenser section mounted horizontally. Centrifugal fans permit ducting of both evaporator and condenser air.

**QUIET OPERATION —** Commercial end users appreciate the extra comfort of quiet operation. Bryant engineers met the challenge by specifying heavy insulation, vibration-resistant construction and operating components that function at low noise levels, all of which keep system sound at a minimum level.

**EASY MAINTENANCE —** When it comes to maintenance, the 502A unit rates high in accessibility. Indoor location is ideal for the maintenance technician, and five access panels, easily removed, provide quick and convenient access to all components when needed. As an added plus, all required service/maintenance access can be from one side, allowing the unit to be located against a wall or ceiling plenum obstruction, an obvious space-saving idea.

**BRYANT QUALITY AND RELIABILITY —** The Bryant 502A Ceiling*PAC* units have much to offer the cost and efficiency-conscious commercial owner. Every unit is thoroughly run tested at the factory and equipped with safety controls designed to monitor and protect over the life of the unit.

**SCROLL COMPRESSOR TECHNOLOGY —** Scroll compressors are designed for high efficiency and are internally spring mounted to minimize vibration noise. Each compressor is hermetically sealed against contamination to promote longer life and dependable operation. Scroll compressors are standard on all units.


CONTROL BOX (OPEN)
HIGH-PRESSURE SWITCH
LOW-PRESSURE SWITCH
FILTER DRIER
EVAPORATOR COIL
COMPRESSOR
ACCUMULATOR
ACCESS TO CONTROL BOX COMPRESSOR, LOW-PRESSURE AND HIGH-PRESSURE SWITCHES SERVICE PORT CONNECTIONS
ACCESS TO FILTER DRIER AND CAPILLARY TUBE
UNIT WITH CLEANABLE FILTER REMOVED
ELECTRIC HEATER LOCATION
JUNCTION BOX
CONDENSER SIDE ACCESS FOR CLEANING
DRAIN
CONDENSER DRAIN CONNECTION (FOR COIL CLEANING)
REMOVABLE CONDENSER MOTOR AND BLOWER ASSEMBLY
EVAPORATOR MOTOR (STD MOTOR SHOWN)
REMOVABLE EVAPORATOR MOTOR AND BLOWER ACCESS DOOR

**Unit Component Locations**

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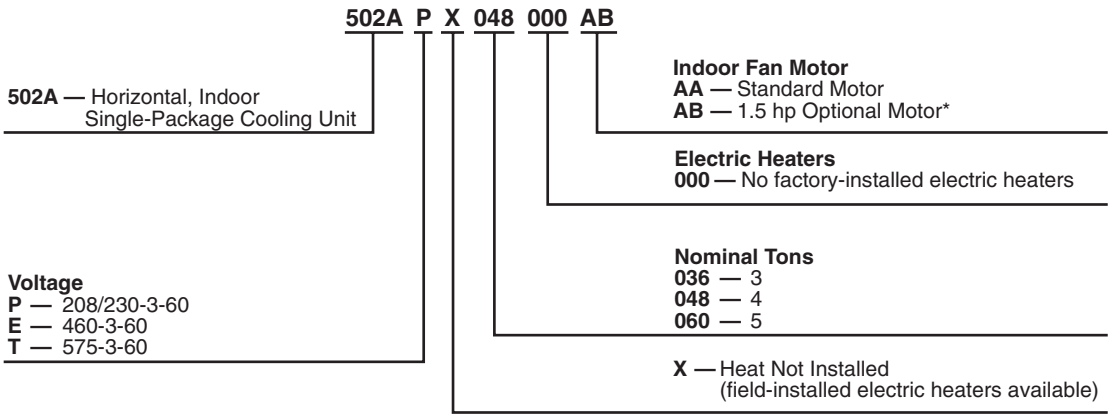
## MODEL NUMBER NOMENCLATURE


502A P X 048 000 AB
502A — Horizontal, Indoor Single-Package Cooling Unit
Voltage
P — 208/230-3-60
E — 460-3-60
T — 575-3-60
Nominal Tons
036 — 3
048 — 4
060 — 5
X — Heat Not Installed (field-installed electric heaters available)
Electric Heaters
000 — No factory-installed electric heaters
Indoor Fan Motor
AA — Standard Motor
AB — 1.5 hp Optional Motor*

*Factory-installed option, contact your local representative for specific information.

## ARI* CAPACITY RATINGS

| UNIT 502A | V-PH-Hz | TOTAL kW | NET TOTAL COOLING CAP. (Btuh) | NOMINAL CFM | EER | SOUND RATING (dB) |
|---|---|---|---|---|---|---|
| **036** | 208/230-3-60<br>460-3-60 | 4.3 | 36,000 | 1200 | 9.0<br>9.0 | 82 |
| **048** | 208/230-3-60<br>460-3-60<br>575-3-60 | 5.5 | 49,500 | 1600 | 9.1<br>9.1<br>9.1 | 82 |
| **060** | 208/230-3-60<br>460-3-60<br>575-3-60 | 6.9 | 58,500 | 2000 | 8.55<br>8.55<br>8.55 | 82 |

**LEGEND**

**dB** — Decibels
**EER** — Energy Efficiency Ratio

*Air-conditioning and Refrigeration Institute.

**NOTES:**
1. Ratings are at zero condenser air static and rated in accordance with ARI Standard 210.
2. EER = $\frac{\text{NET CAPACITY (Btuh)}}{\text{TOTAL WATTS}}$

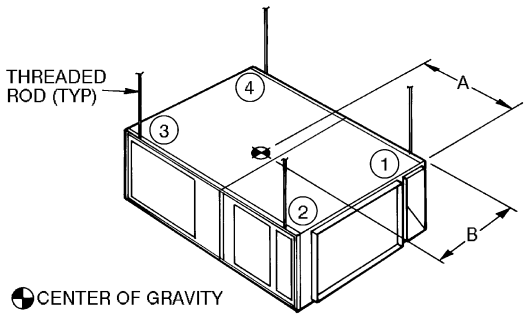
## PHYSICAL DATA

| UNIT 502A | 036 | 048 | 060 |
|---|---|---|---|
| **OPERATING WEIGHT (lb)** | | | |
| Base Unit | 480 | 580 | 590 |
| **SHIPPING WEIGHT (lb)*** | 590 | 690 | 700 |
| **REFRIGERANT TYPE** | | R-22 | |
| Operating Charge (lb)† | 5.5 | 8.0 | 7.6 |
| **COMPRESSOR — TYPE** | | Scroll | |
| Quantity...Model | (1)...ZR34 | (1)...ZR49 | (1)...ZR57 |
| Oil (oz) | 42 | 48 | 54 |
| HPS Setting (psig) | | | |
| Cutout | | 426 ± 7 | |
| Reset | | 320 ± 20 | |
| LPS Setting (psig) | | | |
| Cutout | | 27 ± 4 | |
| Reset | | 67 ± 7 | |
| **CONDENSATE DRAIN CONNECTION** | | | |
| Size (in.)...Type | | 3/4...FPT | |
| **CONDENSER FAN** | | Centrifugal — Belt Drive | |
| Nominal Cfm | 1350 | 2250 | 2450 |
| Maximum Rpm | 1100 | 1500 | |
| Blower Size (in.) | 12 x 6 | 12 x 9 | |
| Pulley Pitch Diameter (in.) | | | |
| Blower | 5.0 | 6.0 | 6.0 |
| Motor (Variable) | 2.4-3.4 | 1.9-2.9 | 2.4-3.4 |
| Motor Hp | 3/4 | 1 | 1 1/2 |
| Motor Rpm | 1725 | 1725 | 1725 |
| **EVAPORATOR AIR FAN (Standard)** | | Centrifugal — Direct Drive | |
| Nominal Cfm | 1200 | 1600 | 2000 |
| Max Rpm | 1150 | 1050 | |
| Blower Size (in.) | 10 x 6 | 10 x 6 | |
| Motor Hp (Rpm) | 1/2 (1075) | 3/4 (1050) | |
| **EVAPORATOR AIR FAN (Optional)** | | Centrifugal Belt Drive | |
| Nominal Cfm | | 1600 | 2000 |
| Max Rpm | | 1300 | |
| Blower Size (in.) | | 10 x 8 | |
| Motor Hp | Not | 1 1/2 | |
| Motor Rpm | Available | 1725 | |
| Pulley Pitch Diameter (in.) | | | |
| Blower | | 4.2 | |
| Motor (Variable) | | 2.4-3.4 | |
| **CONDENSER COIL** | | Copper Tubes — Aluminum Fins | |
| Size (L x H) (in.) | 40 x 16 | 40 x 22 | |
| Number of Rows...Fins/in. | 4...17 | 4...13.6 | |
| **EVAPORATOR COIL** | | Copper Tubes — Aluminum Fins | |
| Size (L x H) (in.) | 34 x 16 | 34 x 22 | |
| Number of Rows...Fins/in. | 4...15 | 4...14.4 | |
| **INDOOR-AIR FILTERS** | | Factory-Supplied Cleanable Type | |
| Number...Size (in.) | 1...14 x 34 x 1 | 1...21 x 34 x 1 | |
| **INTERCONNECTING TUBING SIZE (in.)**** | | | |
| Hot Gas | 1/2 | 1/2 | 1/2 |
| Liquid | 3/8 | 3/8 | 3/8 |

**LEGEND**
**HPS** — High-Pressure Switch
**LPS** — Low-Pressure Switch

*Shipping weights include base unit plus packaging.
†If components are to be split, additional refrigerant will be needed.
**Use Type L copper only.

**NOTE:** If components are to be split, the maximum length of refrigerant tubing to be used is 50 equivalent ft, assuming components will be installed in same horizontal plane. If components are not to be installed in same horizontal plane, contact your Bryant representative for more information.




**NOTE:** Fasten threaded rods through holes in end frames. Use 2 rods on each side of unit for a total of 4.

**⚠ CAUTION**

All panels must be in place when rigging.

### OPERATING WEIGHT DISTRIBUTION AND CENTER OF GRAVITY

| UNIT 502A | WEIGHT (lb/kg) OF CORNER | | | | DIMENSIONS (ft-in./mm) | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | A | B |
| 036 | 95/43 | 113/51 | 148/67 | 124/56 | 2-4 3/4/730 | 2-2 /660 |
| 048 | 112/51 | 143/65 | 183/83 | 142/64 | 2-5 /737 | 2-3 /686 |
| 060 | 114/52 | 143/65 | 186/84 | 147/67 | 2-4 3/4/730 | 2-2 3/4/679 |

## FIELD-INSTALLED ACCESSORIES

**Thermostat and Subbase —** Attractive wall-mounted 24-v accessory provides precise temperature control. Automatic and manual changeover models available. A thermostat subbase is available that works with Cycle-LOC™ circuitry. If a safety device trips, compressor locks out and subbase warning light (LK OUT) alerts occupant.

Two models available: Two stage cool/two stage heat and one stage cool/one stage heat.

**Electric Heaters —** A wide range of models are available: from 5 to 30 kW, 208, 240 and 480-v, 3-ph units. The heaters mount easily on 502A discharge opening. Heater control box is accessible from the bottom of heater.

**NOTE:** Separate power source is required for all heaters.

**Condensate Pump —** The condensate pump is used when the distance and slope to the nearest drain is far enough to prevent the natural drainage of unit. The pump is mounted remotely from the unit and includes a signal light (field-installed) which illuminates when the reservoir rises beyond a certain level. The unit automatically shuts down when this reservoir level is achieved.

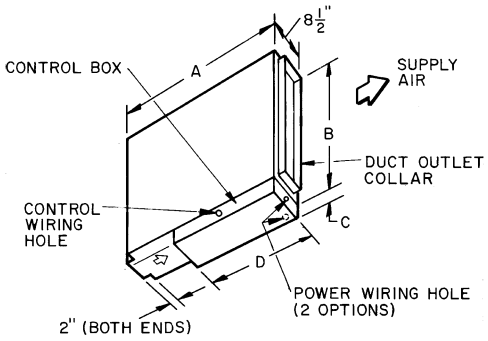
**Head Pressure Control Damper —** This accessory is duct mounted and allows unit to mechanically cool down to 0° F.

Damper dimensions fit size 036 units.

**NOTE:** For use with 048 and 060 size units, ductwork from unit to damper must be reduced in size to fit damper dimensions.

**Vibration Isolators —** Package of four isolators dampen any unit vibration so that vibrating sounds are not transmitted to building structure. Isolators are spring, ceiling type.

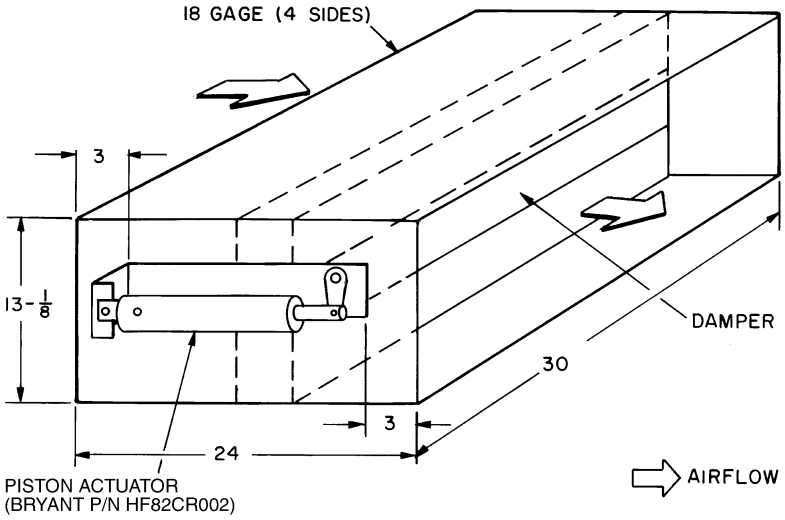
### 88EN ELECTRIC HEAT MODULE ACCESSORY



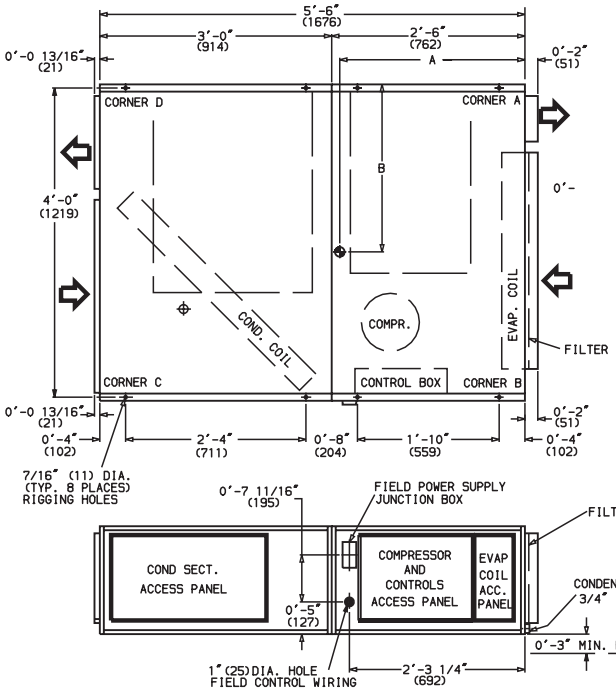

**DIMENSIONS (in.)**

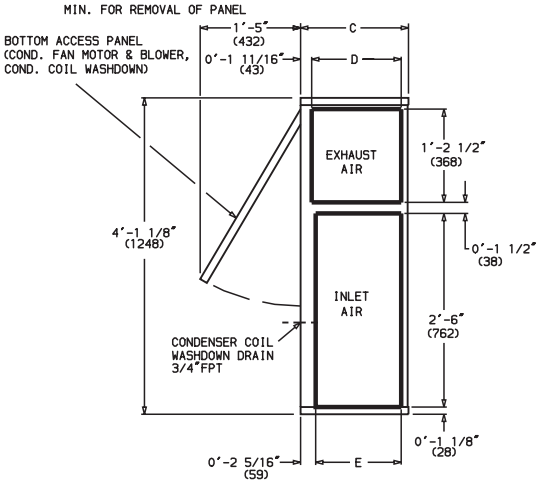
| UNIT 502A | A | B | C | D | DUCT OPENING |
|---|---|---|---|---|---|
| **036** | $13^1/_2$ | 16 | $2^1/_2$ | $8^1/_2$ | $7^1/_8$ x 14 |
| **048,060** | 24 | $21^3/_4$ | 3 | 19 | $7^1/_8$ x $20^7/_8$ |

### HEAD PRESSURE CONTROL DAMPER (in.)

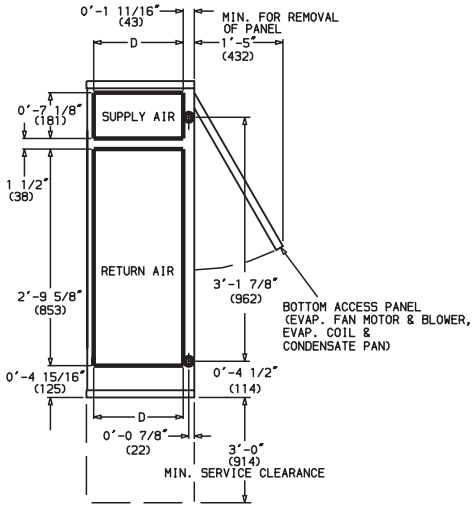


## DIMENSIONS




LEFT SIDE




RIGHT SIDE

**LEGEND**

**COND—** Condenser
**MIN —** Minimum

**DIMENSIONS (ft-in.)**

| UNIT 502A | A | B | C | D | E |
|---|---|---|---|---|---|
| **036** | 2-4 3/4 | 2-2 | 1- 5 3/4 | 1-2 | 1-1 |
| **048** | 2-5 | 2-3 | 1-11 5/8 | 1-8 7/8 | 1-7 7/8 |
| **060** | 2-4 3/4 | 2-2 3/4 | 1-11 5/8 | 1-8 7/8 | 1-7 7/8 |

## SELECTION PROCEDURE (with example)

**I DETERMINE COOLING REQUIREMENTS AT DESIGN CONDITIONS.**

Given:

Gross Cooling Capacity

Required (TC) . . . . . 39,000 Btuh
Sensible Heat Capacity (SHC). . . . . 30,500 Btuh
Temperature of Air Entering Condenser . . . . . 95 F
Temperature of Air Entering
Evaporator . . . . . 80 F edb/67 F ewb
Evaporator Air Quantity . . . . . 1,200 cfm
External Static Pressure:
Condenser . . . . . 0.50 in. wg
Evaporator (includes static pressure
drop of factory-supplied filter
of 0.06 in. wg) . . . . . 0.20 in. wg

**II SELECT UNIT BASED UPON REQUIRED COOLING CAPACITY.**

Enter cooling capacity table at temperature of air entering condenser of 95 F. The 502A036 unit at 1200 cfm and 67 F ewb will provide a Total Capacity (TC) of 44,200 Btuh and a Sensible Heat Capacity (SHC) of 31,300 Btuh. Since the entering air is 80 F edb, an SHC correction is not required.

**III DETERMINE EVAPORATOR FAN PERFORMANCE.**

Enter Evaporator Fan Performance table at 1200 cfm and 502A036 data. The external static pressure shown (0.23 in. wg) will exceed the 0.20 in. wg required. The fan motor will require 0.52 kW.

**IV DETERMINE CONDENSER FAN PERFORMANCE AND MOTOR PULLEY SETTING REQUIREMENTS.**

Enter Condenser Fan Performance table at the selected cfm and required static pressure of 0.50 in. wg. The fan motor will require 0.73 kW and the motor pulley should be set at 2 turns open at 1350 cfm of condenser air required.

# PERFORMANCE DATA

## GROSS COOLING CAPACITIES

**502A036**

| Temp Air Ent Condenser (F) | | Evaporator Air Quantity — Cfm/BF | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 900/0.01 | | | 1050/0.01 | | | 1200/0.02 | | |
| | | Evaporator Air Ewb Temp (F) | | | | | | | | |
| | | 72 | 67 | 62 | 72 | 67 | 62 | 72 | 67 | 62 |
| 85 | TC | 45.0 | 41.1 | 37.3 | 45.8 | 42.3 | 38.6 | 46.5 | 43.4 | 39.8 |
| | SHC | 22.5 | 27.7 | 32.6 | 23.6 | 29.9 | 35.6 | 24.6 | 32.0 | 38.3 |
| | kW | 3.19 | 3.07 | 2.96 | 3.22 | 3.11 | 3.00 | 3.25 | 3.14 | 3.04 |
| 95 | TC | 43.0 | 38.8 | 34.3 | 44.1 | 40.1 | 35.8 | 45.0 | 44.2 | 37.4 |
| | SHC | 21.8 | 26.8 | 31.1 | 23.1 | 29.1 | 34.1 | 24.4 | 31.3 | 36.8 |
| | kW | 3.42 | 3.28 | 3.15 | 3.46 | 3.33 | 3.20 | 3.49 | 3.37 | 3.25 |
| 105 | TC | 40.4 | 35.8 | 29.6 | 41.6 | 37.1 | 31.3 | 42.6 | 38.2 | 33.2 |
| | SHC | 20.9 | 25.6 | 28.5 | 22.3 | 27.9 | 30.8 | 23.7 | 30.2 | 33.2 |
| | kW | 3.63 | 3.48 | 3.38 | 3.68 | 3.53 | 3.44 | 3.73 | 3.58 | 3.49 |
| 115 | TC | 37.7 | 30.6 | 25.8 | 38.7 | 31.6 | 37.8 | 39.7 | 32.8 | 29.7 |
| | SHC | 19.9 | 23.3 | 25.8 | 21.3 | 25.5 | 27.8 | 22.7 | 27.8 | 29.7 |
| | kW | 3.85 | 3.71 | 3.59 | 3.90 | 3.76 | 3.67 | 3.94 | 3.80 | 3.73 |

**502A048**

| Temp Air Ent Condenser (F) | | Evaporator Air Quantity Cfm/BF | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1200/0.06 | | | | 1600/0.08 | | | | 2000/0.10 | | | |
| | | Evaporator Air Ewb Temp (F) | | | | | | | | | | | |
| | | 72 | 67 | 62 | 57 | 72 | 67 | 62 | 57 | 72 | 67 | 62 | 57 |
| 85 | TC | 56.0 | 52.1 | 47.9 | 44.4 | 57.7 | 54.5 | 50.6 | 49.6 | 59.4 | 56.0 | 52.7 | 52.3 |
| | SHC | 27.8 | 34.8 | 41.6 | 44.4 | 30.2 | 39.6 | 48.0 | 49.6 | 32.8 | 43.9 | 52.5 | 52.3 |
| | kW | 3.77 | 3.68 | 3.59 | 3.53 | 3.81 | 3.74 | 3.66 | 3.64 | 3.85 | 3.77 | 3.70 | 3.69 |
| 95 | TC | 54.0 | 50.1 | 45.7 | 42.4 | 55.7 | 52.3 | 48.6 | 47.3 | 57.4 | 53.8 | 51.0 | 50.9 |
| | SHC | 27.1 | 34.0 | 40.4 | 42.4 | 29.6 | 38.8 | 47.0 | 47.3 | 32.4 | 43.2 | 50.9 | 50.9 |
| | kW | 4.21 | 4.11 | 4.01 | 3.95 | 4.25 | 4.18 | 4.09 | 4.07 | 4.31 | 4.21 | 4.15 | 4.15 |
| 105 | TC | 51.8 | 47.9 | 42.3 | 40.2 | 53.6 | 50.0 | 45.1 | 45.0 | 54.6 | 51.4 | 48.9 | 48.6 |
| | SHC | 26.3 | 33.1 | 38.8 | 40.2 | 29.0 | 38.0 | 44.8 | 45.0 | 31.3 | 42.4 | 48.9 | 48.6 |
| | kW | 4.69 | 4.58 | 4.45 | 4.40 | 4.75 | 4.65 | 4.54 | 4.53 | 4.77 | 4.69 | 4.63 | 4.63 |
| 115 | TC | 49.5 | 45.5 | 38.6 | 37.7 | 51.2 | 47.6 | 41.9 | 42.1 | 52.2 | 49.1 | 45.8 | 45.8 |
| | SHC | 25.5 | 32.2 | 37.0 | 37.7 | 28.3 | 27.3 | 41.8 | 42.1 | 30.7 | 42.0 | 45.8 | 45.8 |
| | kW | 5.21 | 5.09 | 4.92 | 4.89 | 5.27 | 5.17 | 5.03 | 5.03 | 5.30 | 5.23 | 5.14 | 5.14 |

**502A060**

| Temp Air Ent Condenser (F) | | Evaporator Air Quantity — Cfm/BF | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1500/0.06 | | | 2000/0.09 | | | 2250/0.10 | | |
| | | Evaporator Air Ewb Temp (F) | | | | | | | | |
| | | 72 | 67 | 62 | 72 | 67 | 62 | 72 | 67 | 62 |
| 85 | TC | 64.8 | 58.5 | 52.9 | 68.0 | 61.5 | 56.3 | 68.9 | 62.5 | 58.0 |
| | SHC | 33.2 | 41.1 | 48.5 | 37.2 | 47.3 | 55.7 | 38.9 | 50.0 | 57.7 |
| | kW | 4.49 | 4.29 | 4.13 | 4.59 | 4.83 | 4.22 | 4.62 | 4.41 | 4.27 |
| 95 | TC | 61.9 | 55.7 | 50.2 | 65.1 | 58.7 | 54.0 | 66.1 | 59.7 | 55.8 |
| | SHC | 32.3 | 40.1 | 47.3 | 36.4 | 46.5 | 54.0 | 38.2 | 49.3 | 55.8 |
| | kW | 4.94 | 4.72 | 4.57 | 5.04 | 4.81 | 4.67 | 5.07 | 4.84 | 4.72 |
| 105 | TC | 58.5 | 52.4 | 47.2 | 61.5 | 55.2 | 51.4 | 62.6 | 56.3 | 53.3 |
| | SHC | 31.1 | 38.8 | 45.8 | 35.2 | 45.2 | 51.4 | 37.1 | 48.1 | 58.2 |
| | kW | 5.41 | 5.20 | 5.04 | 5.51 | 5.28 | 5.16 | 5.55 | 5.32 | 5.22 |
| 115 | TC | 54.9 | 49.0 | 44.1 | 57.8 | 51.7 | 48.7 | 58.7 | 52.6 | 50.4 |
| | SHC | 29.8 | 37.5 | 44.0 | 34.0 | 43.9 | 48.7 | 35.9 | 46.7 | 50.4 |
| | kW | 5.93 | 5.72 | 5.56 | 6.04 | 5.80 | 5.70 | 6.07 | 5.83 | 5.75 |

**LEGEND**

**BF** — Bypass Factor
**edb** — Entering Dry-Bulb
**Ewb** — Entering Wet-Bulb
**kW** — Compressor Motor Power Input (kilowatts)
**SHC** — Gross Sensible Heat Capacity (1000 Btuh)
**TC** — Gross Total Cooling Capacity (1000 Btuh)

**NOTES:**
1. Performance based on nominal condenser airflow listed in physical data table on page 4.
2. SHC is based on 80 F db temperature of air entering the coil.
   Below 80 F db, subtract (corr factor x cfm) from SHC.
   Above 80 F db, add (corr factor x cfm) to SHC.

| BYPASS FACTOR (BF) | ENTERING AIR DRY-BULB TEMPERATURE (F) | | | | | |
|---|---|---|---|---|---|---|
| | 79 | 78 | 77 | 76 | 75 | Under 75 |
| | 81 | 82 | 83 | 84 | 85 | Over 85 |
| | Correction Factor | | | | | |
| .025 | 1.07 | 2.12 | 3.19 | 4.25 | 5.32 | Use formula shown below |
| .05 | 1.04 | 2.07 | 3.11 | 4.14 | 5.18 | |
| .10 | .98 | 1.96 | 2.94 | 3.92 | 4.90 | |
| .20 | .87 | 1.74 | 2.62 | 3.49 | 4.36 | |
| .30 | .76 | 1.53 | 2.29 | 3.05 | 3.82 | |
| .35 | .71 | 1.42 | 2.13 | 2.83 | 3.54 | |

Correction Factor = 1.10 x (1 – BF) x (edb – 80)

The following formulas may be used:

$$t_{ldb} = t_{edb} - \frac{\text{sensible capacity (Btuh)}}{1.10 \times \text{cfm}}$$

$t_{lwb}$ = Wet-bulb temperature corresponding to enthalpy of air leaving evaporator col ($h_{lwb}$).

$$h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{cfm}}$$

Where:

$h_{ewb}$ = Enthalpy of air entering evaporator coil

## EVAPORATOR FAN PERFORMANCE

| CFM | UNIT SIZE — 502A | | | | | |
|---|---|---|---|---|---|---|
| | 036 | | 048* | | 060* | |
| | ESP | Fan kW | ESP | Fan kW | ESP | Fan kW |
| 600 | — | — | — | — | — | — |
| 700 | — | — | — | — | — | — |
| 800 | — | — | — | — | — | — |
| 900 | .69 | .44 | — | — | — | — |
| 1000 | .57 | .46 | — | — | — | — |
| 1100 | .42 | .49 | 1.10 | .45 | 1.11 | .52 |
| 1200 | .23 | .52 | 1.01 | .49 | 1.045 | .55 |
| 1300 | — | — | .90 | .51 | .97 | .57 |
| 1400 | — | — | .79 | .55 | .88 | .59 |
| 1500 | — | — | .67 | .58 | .78 | .62 |
| 1600 | — | — | .54 | .61 | .67 | .64 |
| 1700 | — | — | .39 | .64 | .53 | .67 |
| 1800 | — | — | .22 | .67 | .52 | .70 |
| 1900 | — | — | .03 | .70 | .40 | .74 |
| 2000 | — | — | — | — | .28 | .78 |

**LEGEND**

**ESP —** External Static Pressure (in. wg)
**kW —** Total Fan Motor Power Input (kilowatts)

*Standard direct drive indoor (evaporator) fan motor (IFM). For optional belt drive IFM performance, see table at right.

**NOTES:**
1. Above fan performance is based on wet coil and deducted casing losses, and clean factory-installed permanent cleanable filter.
2. Evaporator fans are direct drive (except 048, 060 special order evaporator-fan motor option). Refer to Belt Drive Evaporator Fan Performance table on this page.
3. Interpolation is permissible, do not extrapolate.
4. For units installed with accessory electric heaters, see Electric Heater Static Pressure Drop table for additional performance losses.

## BELT DRIVE EVAPORATOR FAN PERFORMANCE (Special Order Only, Pricing and ordering on related price pages.)

| CFM | UNIT SIZE — 502A | | | |
|---|---|---|---|---|
| | 048 | | 060 | |
| | ESP | Fan kW | ESP | Fan kW |
| 1800 | — | — | — | — |
| 1850 | — | — | — | — |
| 1900 | — | — | — | — |
| 1950 | .81 | 1.03 | — | — |
| 2000 | .72 | 1.05 | — | — |
| 2050 | .63 | 1.07 | — | — |
| 2100 | .55 | 1.08 | 1.02 | 1.17 |
| 2150 | .47 | 1.11 | .93 | 1.21 |
| 2200 | .42 | 1.14 | .84 | 1.24 |
| 2250 | .34 | 1.17 | .75 | 1.27 |

**LEGEND**

**ESP —** External Static Pressure (in. wg)
**kW —** Total Fan Power Motor Input (kilowatts)

**NOTE:** Pulley setting must be adjusted to limit cfm to 450 cfm/ton *maximum*. Unit operation beyond that limit may result in blow-off and condensate problems.

## CONDENSER FAN PERFORMANCE

| UNIT 502A | COND CFM | EXTERNAL STATIC PRESSURE (in. wg) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0.0 | | 0.1 | | 0.2 | | 0.3 | | 0.4 | | 0.5 | | 0.6 | |
| | | Turns | kW | Turns | kW | Turns | kW | Turns | kW | Turns | kW | Turns | kW | Turns | kW |
| 036 | 1650 | 2 | .84 | — | — | — | — | — | — | — | — | — | — | — | — |
| | 1600 | — | — | 2 | .82 | — | — | — | — | — | — | — | — | — | — |
| | 1550 | — | — | — | — | 2 | .80 | — | — | — | — | — | — | — | — |
| | 1500 | 3 | .72 | — | — | — | — | 2 | .78 | 1 | .84 | — | — | — | — |
| | 1450 | 4 | .63 | 3 | .70 | — | — | — | — | 2 | .76 | 1 | .83 | — | — |
| | 1400 | — | — | 4 | .61 | 3 | .68 | — | — | — | — | — | — | 1 | .81 |
| | 1350 | 5 | .51 | — | — | — | — | 3 | .67 | — | — | 2 | .73 | — | — |
| | 1300 | — | — | 5 | .50 | 4 | .57 | — | — | 3 | .65 | — | — | 2 | .71 |
| 048 | 2700 | 2 | .90 | — | — | — | — | — | — | — | — | — | — | — | — |
| | 2600 | — | — | 2 | .87 | — | — | — | — | — | — | — | — | — | — |
| | 2550 | 3 | .81 | — | — | — | — | — | — | — | — | — | — | — | — |
| | 2450 | — | — | 3 | .77 | 2 | .83 | 1 | .89 | — | — | — | — | — | — |
| | 2350 | — | — | — | — | — | — | 2 | .80 | 1 | .86 | — | — | — | — |
| | 2300 | 4 | .68 | — | — | 3 | .74 | — | — | — | — | 0 | .90 | — | — |
| | 2200 | — | — | 4 | .66 | — | — | — | — | 2 | .77 | 1 | .82 | 0 | .86 |
| 060 | 3100 | 3 | 1.34 | — | — | — | — | — | — | — | — | — | — | — | — |
| | 3000 | — | — | 3 | 1.32 | — | — | — | — | — | — | — | — | — | — |
| | 2900 | — | — | — | — | — | — | 2 | 1.39 | — | — | — | — | — | — |
| | 2850 | 4 | 1.11 | — | — | 3 | 1.24 | — | — | — | — | — | — | — | — |
| | 2750 | — | — | 4 | 1.07 | — | — | — | — | 2 | 1.32 | — | — | — | — |
| | 2700 | — | — | — | — | — | — | 3 | 1.17 | — | — | — | — | — | — |
| | 2650 | — | — | — | — | — | — | — | — | — | — | — | — | 1 | 1.37 |
| | 2600 | 5 | .95 | — | — | 4 | 1.01 | — | — | — | — | 2 | 1.26 | — | — |
| | 2550 | — | — | — | — | — | — | — | — | 3 | 1.12 | — | — | — | — |
| | 2500 | — | — | 5 | .92 | — | — | — | — | — | — | — | — | — | — |
| | 2450 | — | — | — | — | — | — | 4 | .97 | — | — | — | — | 2 | 1.21 |
| | 2400 | — | — | — | — | 5 | .90 | — | — | — | — | 3 | 1.08 | — | — |

**LEGEND**

**kW —** Total Fan Motor Power Input (kilowatts)

**NOTES:**
1. Above fan performance is based upon coil and deducted casing losses only.
2. External static pressure (ESP) is measured in inches water gage (in. wg).
3. Interpolation is permissible. Do not extrapolate.
4. Minimum one turn open of motor pulley is required on unit sizes 036 and 060.
5. Number of turns open applies to field setting of motor pulley.
6. Factory setting as follows: 036, 4 turns open; 048, 2 turns open; 060, 5 turns open.

## CONTROLS

### OPERATING SEQUENCE

**Cooling**

1. Thermostat calls for cooling.
   a. Indoor (evaporator) fan relay is energized and starts evaporator fan.
   b. Compressor contactor is energized to start compressor and condenser fan (up to a 5-minute delay on single-phase units).
2. When room thermostat is satisfied, the evaporator fan, compressor, and condenser fan shut off.

**Continuous Fan Operation —** The thermostat can be set for continuous operation by setting the fan switch to ON.

## ELECTRICAL DATA

| UNIT 502A | V-PH (60 Hz) | VOLTAGE RANGE | | COMPRESSOR | | FAN MOTORS | | | | POWER SUPPLY | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Evaporator | | Condenser | | Min Ckt Amps | MOCP Amps |
| | | Min | Max | RLA | LRA | Hp | FLA | Hp | FLA | | |
| 036 | 208/230-3 | 187 | 254 | 10.2 | 77.0 | .50 | 3.20 | .75 | 3.93 | 19.9 | 25 |
| | 460-3 | 414 | 508 | 4.3 | 37.0 | .50 | 1.50 | .75 | 1.97 | 8.8 | 15 |
| 048 | 208/230-3 | 187 | 254 | 13.5 | 99.0 | .75 | 4.00 | 1.0 | 3.93 | 24.8 | 35 |
| | 460-3 | 414 | 508 | 7.4 | 49.5 | .75 | 2.15 | 1.0 | 1.97 | 13.4 | 15 |
| | 575-3 | 518 | 632 | 5.8 | 40.0 | .75 | 1.40 | 1.0 | 1.45 | 10.1 | 15 |
| 048* | 208/230-3 | 187 | 254 | 13.5 | 99.0 | 1.5 | 5.60 | 1.0 | 3.93 | 26.4 | 35 |
| | 460-3 | 414 | 508 | 7.4 | 49.5 | 1.5 | 2.80 | 1.0 | 1.97 | 14.0 | 20 |
| 060 | 208/230-3 | 187 | 254 | 17.3 | 123.0 | .75 | 4.00 | 1.5 | 4.82 | 30.4 | 45 |
| | 460-3 | 414 | 508 | 9.0 | 62.0 | .75 | 2.15 | 1.5 | 2.41 | 15.8 | 25 |
| | 575-3 | 518 | 632 | 7.1 | 50.0 | .75 | 1.40 | 1.5 | 1.90 | 12.2 | 20 |
| 060* | 208/230-3 | 187 | 254 | 17.3 | 123.0 | 1.5 | 5.60 | 1.5 | 4.82 | 32.0 | 40 |
| | 460-3 | 414 | 508 | 9.0 | 62.0 | 1.5 | 2.80 | 1.5 | 2.41 | 16.5 | 25 |

**LEGEND**

**HACR** — Heating, Air Conditioning, and Refrigeration
**Hp** — Horsepower
**FLA** — Full Load Amps
**LRA** — Locked Rotor Amps
**MOCP** — Maximum Overcurrent Protection (HACR breaker)
**RLA** — Rated Load Amps

*Optional evaporator-fan motor nameplate data.

## ELECTRIC HEATER DATA

| ELECTRIC HEATER UNIT 88EN | USED WITH UNIT 502A | V-PH (60 Hz) | CAP. (kW) | BRANCH CIRCUIT | | |
|---|---|---|---|---|---|---|
| | | | | Heater Amps | MCA | MOCP (Amps) |
| 0050CA01 | 036 1-Stage Heat | 240-1 | 5.0 | 20.8 | 26.0 | 30 |
| 0075CA01 | | 240-1 | 7.5 | 31.3 | 39.1 | 40 |
| 0115CA01 | | 240-1 | 11.5 | 47.9 | 59.9 | 60 |
| 0075EA01 | | 208-3 | 5.6 | 15.6 | 19.5 | 20 |
| | | 240-3 | 7.6 | 18.0 | 22.6 | 25 |
| 1150EA01 | | 208-3 | 11.3 | 31.2 | 39.0 | 40 |
| | | 240-3 | 15.0 | 36.1 | 45.1 | 50 |
| 0100EA01 | 048, 060 2-Stage Heat | 208-3 | 7.5 | 20.8 | 26.0 | 30 |
| | | 240-1* | 10.0 | 41.7 | 52.1 | 60 |
| | | 240-3 | 10.0 | 24.1 | 30.1 | 35 |
| 0150EA01 | | 208-3 | 11.3 | 31.2 | 39.0 | 40 |
| | | 240-1* | 15.0 | 62.5 | 78.1 | 80 |
| | | 240-3 | 15.0 | 36.1 | 45.1 | 50 |
| 0200EA01 | | 208-3 | 15.0 | 41.7 | 52.1 | 60 |
| | | 240-1* | 20.0 | 83.3 | 104.2 | 110 |
| | | 240-3 | 20.0 | 46.9 | 58.6 | 60 |
| 0300EA01 | | 208-3 | 22.5 | 62.5 | 78.2 | 80 |
| | | 240-3 | 30.0 | 72.2 | 90.2 | 100 |
| 0300CA01 | | 240-1 | 30.0 | 124.0 | 155.0 | 175 |
| 0100FA01 | | 480-3 | 10.0 | 12.0 | 15.0 | 15 |
| 0150FA01 | | 480-3 | 15.0 | 18.1 | 22.6 | 25 |
| 0200FA01 | | 480-3 | 20.0 | 24.1 | 30.1 | 35 |
| 0300FA01 | | 480-3 | 30.0 | 36.1 | 45.1 | 50 |

**LEGEND**

**MCA** — Minimum Circuit Ampacity
**MOCP** — Maximum Overcurrent Circuit Protection (Fuses or Circuit Breaker)

*May be field converted to single-phase units, see electric heat installation instructions.

**NOTE:** Separate power source is required for all heaters. See heater accessory installation instructions. Control from base unit 502A (24 v).

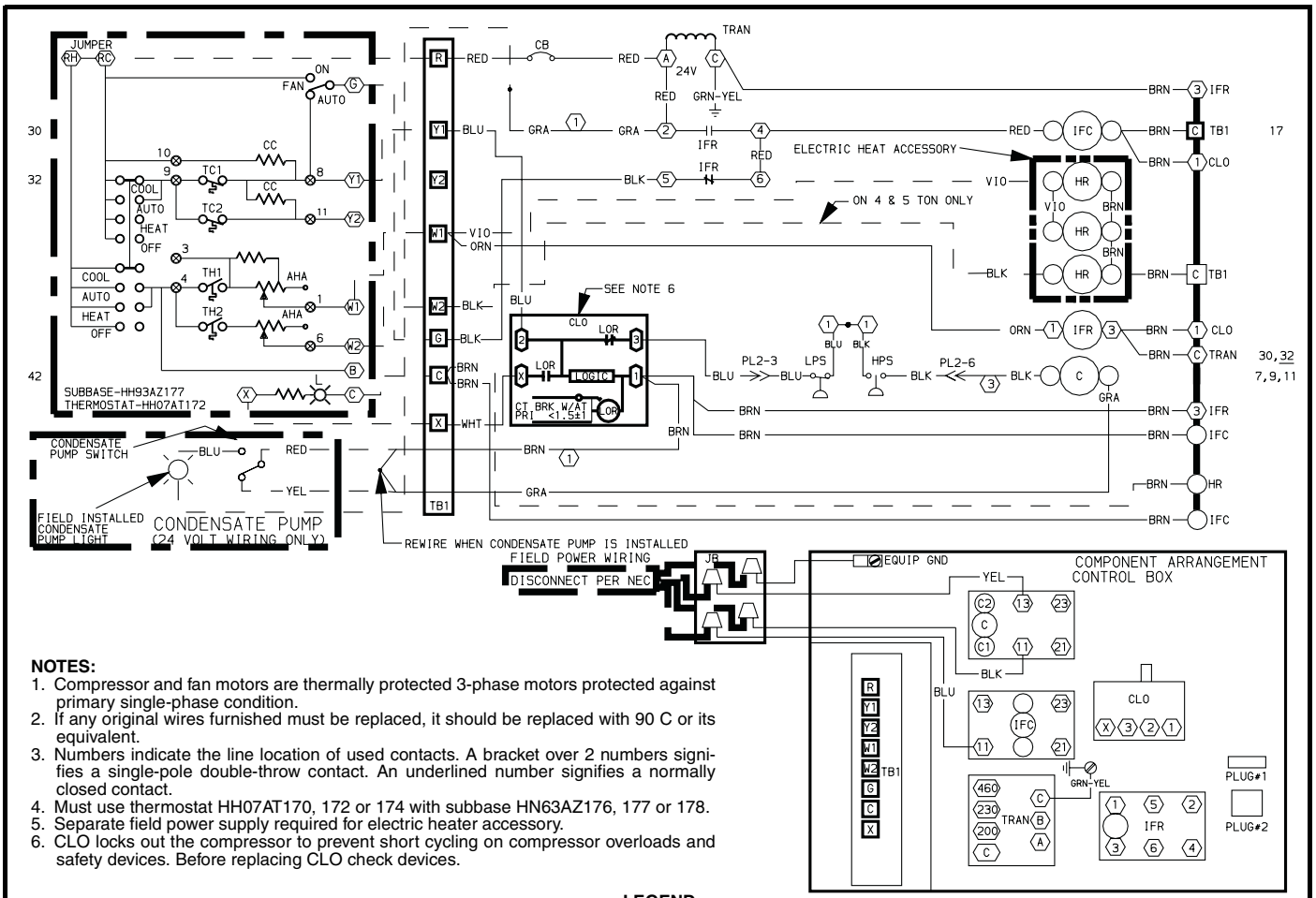
## ELECTRICAL DATA (cont)

### ELECTRIC HEATER STATIC PRESSURE DROP (in. wg)

| ELECTRIC HEATER UNIT 88EN | UNIT 502A | MIN CFM | UNIT CFM | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 600 | 800 | 1000 | 1200 | 1400 | 1600 | 1800 | 2000 | 2200 |
| 0050CA01 | 036 1-stage heat | 400 | .02 | .04 | .06 | .10 | — | — | — | — | — |
| 0075CA01 | | 510 | .03 | .06 | .10 | .16 | — | — | — | — | — |
| 0115CA01<br>0075EA01<br>1150EA01 | | 620<br>320<br>720 | .04 | .08 | .13 | .19 | — | — | — | — | — |
| 0100EA01<br>0150EA01 | 048, 060 2-stage heat | 970<br>1240 | — | — | — | .04 | .06 | .08 | .12 | .15 | .17 |
| 0200EA01<br>0300EA01<br>0300CA01 | | 1350<br>1220<br>1220 | — | — | — | .08 | .11 | .14 | .18 | .22 | .26 |
| 0100FA01<br>0150FA01 | | 1130<br>1360 | — | — | — | .04 | .06 | .08 | .12 | .15 | .17 |
| 0200FA01<br>0300FA01 | | 1350<br>1270 | — | — | — | .08 | .11 | .14 | .18 | .22 | .26 |

**NOTE:** Above electric heaters are *not* UL or CSA listed for use with optional high-static evaporator-fan motor (048, 060 units only).

## TYPICAL WIRING SCHEMATICS




**NOTES:**
1. Compressor and fan motors are thermally protected 3-phase motors protected against primary single-phase condition.
2. If any original wires furnished must be replaced, it should be replaced with 90 C or its equivalent.
3. Numbers indicate the line location of used contacts. A bracket over 2 numbers signifies a single-pole double-throw contact. An underlined number signifies a normally closed contact.
4. Must use thermostat HH07AT170, 172 or 174 with subbase HN63AZ176, 177 or 178.
5. Separate field power supply required for electric heater accessory.
6. CLO locks out the compressor to prevent short cycling on compressor overloads and safety devices. Before replacing CLO check devices.

**LEGEND**

| | | |
|---|---|---|
| **AHA** | — | Adjustable Heat Anticipator |
| **BKR W/AT** | — | Brakes with Amp Turns |
| **C** | — | Contactor Compressor |
| **CB** | — | Circuit Breaker |
| **CC** | — | Cooling Compensator |
| **CLO** | — | Compressor Lockout |
| **CT** | — | Current Transformer |
| **EQUIP GND** | — | Equipment Ground |
| **HPS** | — | High-Pressure Switch |
| **HR** | — | Heater Relay |
| **IFC** | — | Indoor (Evaporator) Fan Contactor |
| **IFR** | — | Indoor (Evaporator) Fan Relay |
| **JB** | — | Junction Box |
| **L** | — | Light |
| **LOR** | — | Lockout Relay |
| **LPS** | — | Low-Pressure Switch |
| **NEC** | — | National Electrical Code |
| **PL** | — | Plug Assembly |
| **TB** | — | Terminal Block |
| **TC** | — | Thermostat-Cooling |
| **TH** | — | Thermostat-Heating |
| **TRAN** | — | Transformer |

X — Marked Wire

Denotes connection point between subbase and thermostat

Terminal (Marked)

Terminal (Unmarked)

Terminal Block

Field Splice

Splice (Marked)

Factory Splice

Factory Wiring

Accessory or Optional Wiring

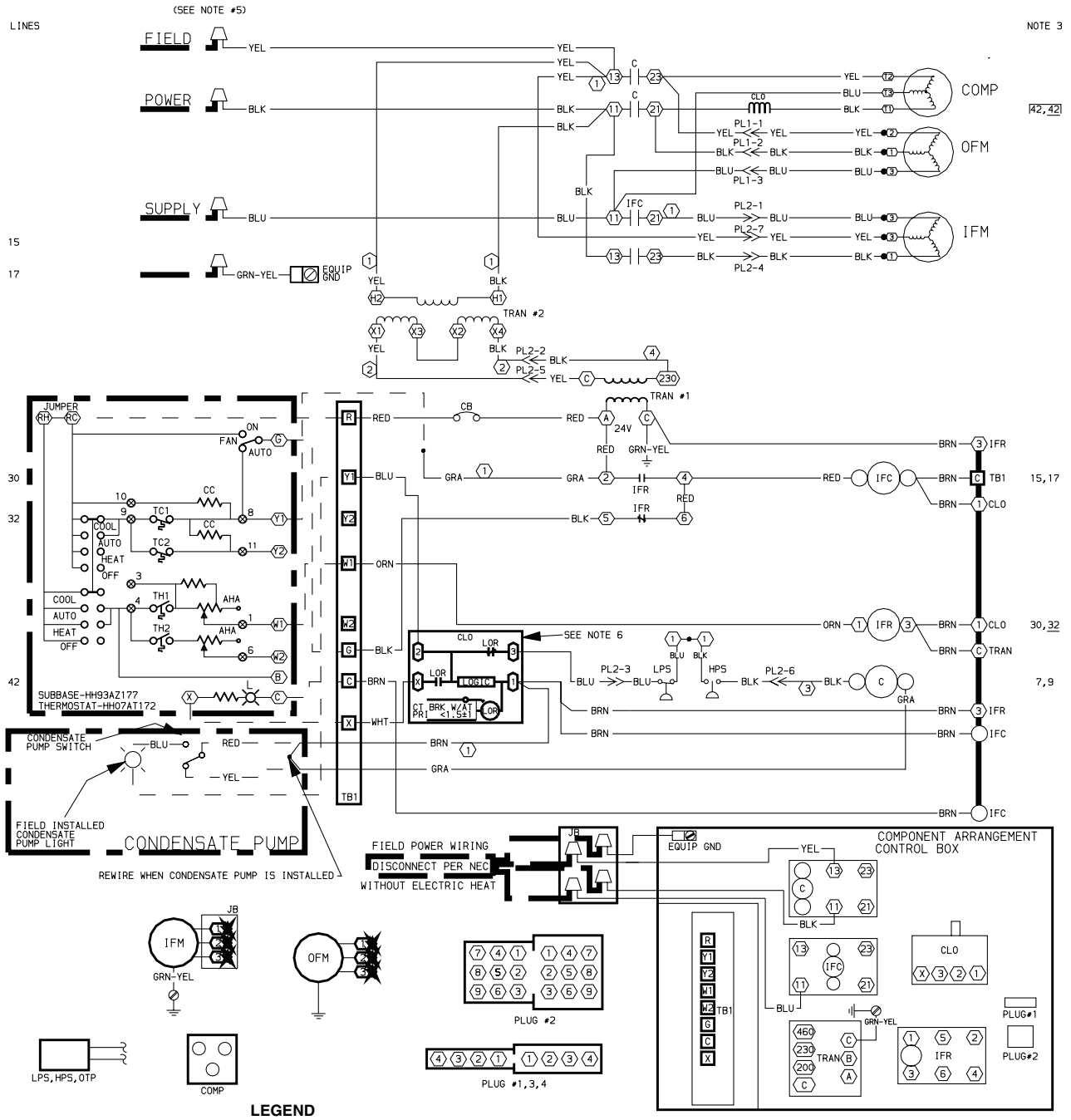
Field Control Wiring

Field Power Wiring

To indicate common potential only, not to represent wiring

**502A036,048,060, 208/230-3-60, 460-3-60 Units**

## TYPICAL WIRING SCHEMATICS (cont)




### LEGEND

| | | |
|---|---|---|
| **AHA** | — | Adjustable Heat Anticipator |
| **BKR W/AT** | — | Breaks with Amp Turns |
| **C** | — | Contactor Compressor |
| **CC** | — | Cooling Compensator |
| **CLO** | — | Compressor Lockout |
| **COMP** | — | Compressor Motor |
| **CT** | — | Current Transformer |
| **EQUIP GND** | — | Equipment Ground |
| **HPS** | — | High-Pressure Switch |
| **IFC** | — | Indoor-Fan Contactor |
| **IFM** | — | Indoor-Fan Motor |
| **IFR** | — | Indoor-Fan Relay |
| **JB** | — | Junction Box |
| **L** | — | Light |
| **LOR** | — | Lockout Relay |
| **LPS** | — | Low-Pressure Switch |
| **NEC** | — | National Electrical Code |
| **OFM** | — | Outdoor-Fan Motor |
| **PL** | — | Plug Assembly |
| **PRI** | — | Primary |
| **TB** | — | Terminal Block |
| **TC** | — | Thermostat-Cooling |
| **TH** | — | Thermostat-Heating |
| **TRAN** | — | Transformer |
| X | | Marked Wire |

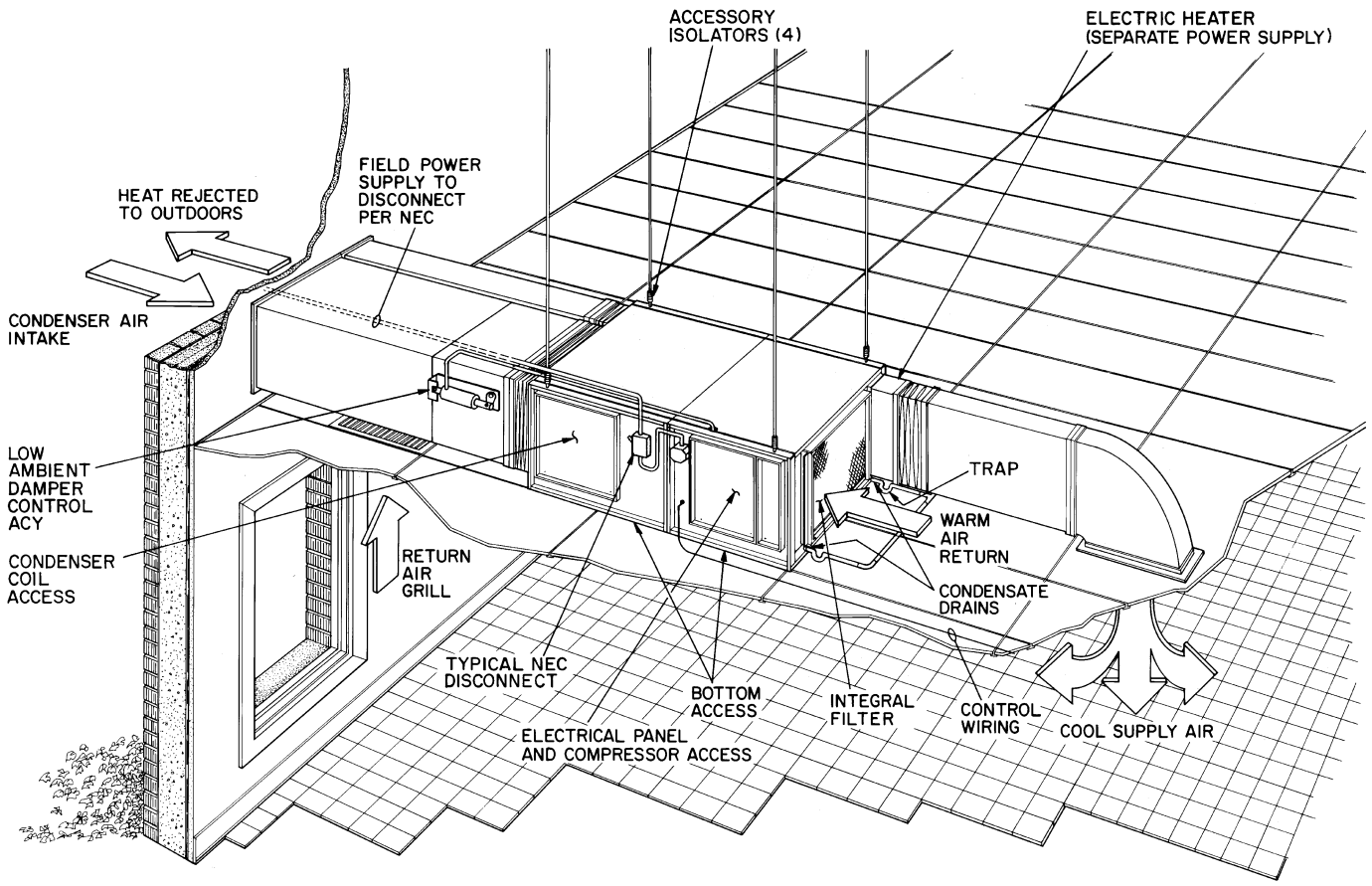
Denotes connection point between subbase and thermostat
Terminal (Marked)
Terminal (Unmarked)
Terminal Block
Field Splice
Splice (Marked)
Factory Splice
Factory Wiring
Accessory or Optional Wiring
Field Control Wiring
Field Power Wiring
To indicate common potential only, not to represent wiring

**NOTES:**

1. Compressor and fan motors are thermally protected, three-phase motors protected against primary single-phase conditions.
2. If any original wires furnished must be replaced, it should be replaced with 90 C or its equivalent.
3. Numbers indicate the line location of used contacts. A bracket over 2 numbers signifies a single-pole double-throw contact. An underlined number signifies a normally closed contact. Plain (no line) number signifies a normally open contact.
4. Must use thermostat HH07AT170, 172 or 174 with subbase HN63AZ176, 177 or 179.
5. Neutral for 240/416 v supply (Canada only).
6. The CLO locks out the compressor to prevent short cycling on compressor overloads and safety devices, before replacing CLO check these devices.

**502A048,060, 575-3-60 Units**

## TYPICAL PIPING AND WIRING




**LEGEND**

**NEC —** National Electrical Code

**NOTES:**

1. Wiring and piping shown are not intended for or to include all details for specific installation.
2. All wiring must comply with applicable local and national codes.
3. All piping must follow standard refrigerant piping techniques.
4. For other installation details refer to Installation Instructions.
5. If unit sections are field split, 8 threaded support rods are required.
6. Ensure condenser air recirculation is minimized.

## APPLICATION DATA

### OUTDOOR-AIR TEMPERATURE OPERATING LIMITS (F)

| UNIT 502A | | 036 | 048 | 060 |
|---|---|---|---|---|
| **Without Head Pressure Control** | **Minimum** | 35 | 40 | 40 |
| | **Maximum** | 126 | 126 | 126 |
| **With Head Pressure Control** | **Minimum** | 0 | 0 | 0 |
| | **Maximum** | 126 | 126 | 126 |

**Field Splitting Instructions —** If components are split, maximum length of refrigerant tubing to be used is 50 ft, assuming components are installed in same horizontal plane. Condenser may be mounted up to 12-ft above evaporator. Liquid line tubing is $^{3}/_{8}$-in. OD copper tubing, and discharge line is $^{1}/_{2}$-in. OD copper tubing. Units should always be within line of sight from each other, or separate NEC (National Electrical Code) disconnects will be required. Junction boxes should be installed in both the evaporator and condenser sections adjacent to D-shaped grommets, to provide a location to splice the outdoor-fan motor factory wiring (no. 16 AWG [American Wire Gage], $^{4}/_{64}$-in. thick insulation). Field wiring should be a minimum of no. 16 AWG, $^{4}/_{64}$-in. thick insulation. Check all applicable electrical codes to ensure proper compliance.

## GUIDE SPECIFICATIONS

**INDOOR PACKAGED UNIT**

HVAC GUIDE SPECIFICATIONS — SECTION 15787

SIZE RANGE: 3 TO 5 TONS, NOMINAL

BRYANT MODEL NUMBER: 502A

**PART 1 — GENERAL**

1.01 SYSTEM DESCRIPTION

Indoor mounted, electrically controlled packaged horizontal cooling unit utilizing a hermetic type scroll compressor.

1.02 QUALITY ASSURANCE

A. Unit shall be certified in accordance with ARI Standard 210.

B. Unit shall be UL listed and carry a UL label.

C. Unit shall be CSA approved (except 3 ton, 3-phase units).

D. Unit shall be factory run-tested to ensure proper performance prior to delivery.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Unit shall be shipped completely assembled and ready to operate.

B. Unit shall be shipped factory charged with R-22 refrigerant.

C. Unit shall be stored and handled in accordance with the unit manufacturer's instructions.

**PART 2 — PRODUCTS**

2.01 EQUIPMENT

A. General:

Factory assembled horizontal, single piece, air cooled, indoor, ceiling plenum mounted electric cooling unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, refrigerant charge (R-22), and special features required prior to start-up.

B. Unit Cabinet:

1. Constructed of galvanized steel.
2. Interior shall be insulated with $^1/_2$-in. thick neoprene coated fiberglass. Insulation shall be bonded to interior surfaces by sprayed water reduceable adhesive.
3. Equipped with 3 same side access panels and 2 bottom hanging removable doors to facilitate ease of maintenance. Side panels allow access to the control box, refrigeration components, and condenser coil. Control box shall be hinged allowing access to the compressor and pressure switches. Bottom doors shall allow access to and easy removal of the condenser and evaporator motors and blower assemblies.
4. Equipped with two $^3/_4$-in. threaded condensate drain connections below the evaporator coil and one $^3/_4$-in. threaded connection for condenser coil wash down. Connections shall be factory plugged for field removal.
5. Field splittable through the removal of 4 bolts and extending refrigerant piping and wiring to allow remote horizontal or vertical condenser mounting.
6. Unit shall have an integral hanging bracket requiring only 4 threaded rods (8 if unit is split) run to the top flange of the unit for hanging, eliminating need for external hanger brackets.
7. Contains junction box for power connection and opening for routing of control wiring.

C. Fans:

1. Evaporator:
   a. Blower shall be of the forward-curved, centrifugal, direct-drive type or belt drive (4 and 5 tons only).
   b. Motor shall have permanently lubricated bearings.
   c. Unit sizes 048, 060 shall be available with an optional 1.5 hp fan motor.
2. Condenser:
   a. Blower shall be of the forward-curved, centrifugal, belt drive type.
   b. Motor shall have permanently lubricated bearings.

D. Compressor:

1. Fully hermetic scroll type.
2. Mounted on suitable spring vibration isolators.
3. Equipped with internal line break protection.

E. Coils:

Evaporator and condenser coils shall be of non-ferrous construction with aluminum fins mechanically bonded to seamless copper tubes with all joints brazed.

F. Refrigerant Components:

Refrigerant components shall include:

1. Capillary tube feed system.
2. Refrigerant filter-drier.

G. Filter Section:

Filter section shall consist of factory-installed, permanent, cleanable air filter, removable from the same side as the access panels without the use of tools.

H. Controls and Safeties:

Control system shall include a high-pressure switch, a low-pressure switch, and a compressor lockout feature which upon tripping of any safety device shall prevent compressor from restarting until reset at the thermostat.

I. Operating Characteristics:

1. Unit shall operate using R-22 refrigerant.
2. Unit shall be designed for indoor suspended horizontal mounting and operation.

J. Electrical Requirements:

Unit shall have single point power connection to leads in terminal box.

K. Special Features:

Certain standard features are not applicable when the features designated by * are specified. For assistance in amending the specifications, your local Bryant Sales Office should be contacted.

* 1. Electric Heat Module:
   a. Provides encased heater elements that shall attach directly to the base unit discharge.
   b. Shall have bottom access.
   c. UL listed.

* 2. Thermostat Assembly:

Provides cooling and fan control. Standard subbase shall include "Compressor malfunction light" designed to illuminate if compressor lockout is activated.

## GUIDE SPECIFICATIONS (cont)

3. Compressor Cycle Delay:

   Prevents compressor from restarting for a minimum of 5 minutes after shutdown.

* 4. Condensate Pump:

   Unit shall be equipped with remotely located condensate pump. A field-installed light shall illuminate when reservoir rises above a preset level. Unit shall shut down upon reservoir light illumination.

* 5. Head Pressure Control Package:

   Allows unit to mechanically cool down to 0° F ambient temperature. Package shall include damper operating device and all necessary hardware.

6. Vibration Isolation Package:

   Shall provide 4 spring hangers for ceiling mounted unit to damper vibration that may be transmitted to building structure.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

UNIT MUST BE INSTALLED IN ACCORDANCE
WITH INSTALLATION INSTRUCTIONS

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